

A Unified Explicit Construction of 2N-Soliton Solutions for Evolution Equations Determined by 2×2 AKNS System

ZHOU Zhen-Jiang and LI Zhi-Bin

Department of Computer Science, East China Normal University, Shanghai 200062, China
(Received: 2002-7-11; Revised:)

Abstract: An explicit N-fold Darboux transformation for evolution equations determined by general 2×2 AKNS system is constructed. By using the Darboux transformation, the solutions of the evolution equations are reduced to solving a linear algebraic system, from which a unified and explicit formulation of 2N-soliton solutions for the evolution equation are given. Furthermore, a reduction technique for MKdV equation is presented, and an N-fold Darboux transformation of MKdV hierarchy is constructed through the reduction technique. A Maple package which can entirely automatically output the exact N-soliton solutions of the MKdV equation is developed.

PACS: 03.40.Kf, 02.30.Jr

Key words: AKNS system, N-fold Darboux transformation, N-soliton solutions, symbolic computation

[\[Full text: PDF\]](#)

Close